

RECEIVED
CENTRAL FAX CENTER
JUL 31 2006

09/575094US03

09/800,418

Art Unit: 1711

LISTING OF THE CLAIMS

- Claim 1. (Currently Amended) An oxygen barrier composition, comprising:
a blend of an oxygen barrier polymer and an oxygen scavenging polymer,
a photoinitiator, and
an oxidation catalyst,
wherein the blend comprises from ~~[[1%]]~~5% to 30% oxygen scavenging polymer, the oxygen barrier polymer is poly(ethylene/vinyl alcohol) (EVOH), and the oxygen scavenging polymer ~~is~~ consists essentially of MXD6.
- Claims 2-4. (Canceled)
- Claim 5. (Previously Presented) The composition of claim 1, wherein the composition has an oxygen transmission rate at least 2 times lower than that of poly(ethylene/vinyl alcohol) (EVOH) alone.
- Claim 6. (Original) The composition of claim 1, wherein the oxidation catalyst comprises a transition metal selected from cobalt, copper, nickel, iron, manganese, rhodium, or ruthenium.
- Claim 7. (Original) The composition of claim 6, wherein the oxidation catalyst is a salt comprising a counterion selected from C₁-C₂₀ alkanoates.
- Claim 8. (Original) The composition of claim 7, wherein the transition metal salt is cobalt oleate, cobalt stearate, or cobalt neodecanoate.
- Claim 9. (Canceled)
- Claim 10. (Original) The composition of claim 1, wherein the photoinitiator is selected from benzophenone derivatives containing at least two benzophenone moieties and having the formula:



wherein

A is a bridging group selected from sulfur; oxygen; carbonyl; -SiR''₂-, wherein each R'' is individually selected from alkyl groups containing from 1 to 12 carbon atoms, aryl groups containing 6 to 12 carbon atoms, or alkoxy groups containing from 1 to 12 carbon atoms; -NR'''-, wherein R''' is an alkyl group containing 1 to 12 carbon atoms, an aryl group containing 6 to 12 carbon atoms, or hydrogen; or an organic group containing from 1 to 50 carbon atoms;
a is an integer from 0 to 11;

09/575094US03

09/800,418

Art Unit: 1711

4

B is a substituted or unsubstituted benzophenone group; and

b is an integer from 2 to 12.

Claim 11. (Original) The composition of claim 10, wherein the photoinitiator is selected from dibenzoyl biphenyl, substituted dibenzoyl biphenyl, benzoylated terphenyl, substituted benzoylated terphenyl, tribenzoyl triphenylbenzene, substituted tribenzoyl triphenylbenzene, benzoylated styrene oligomer, or substituted benzoylated styrene oligomer.

Claim 12. (Original) The composition of claim 1, further comprising an antioxidant.

Claim 13. (Original) The composition of claim 12, wherein the antioxidant is selected from 2,6-di(t-butyl)-4-methylphenol(BHT), 2,2'-methylene-bis(6-t-butyl-p-cresol), triphenylphosphite, tris-(nonylphenyl)phosphite, vitamin E, tetra-bismethylene 3-(3,5-ditertbutyl-4-hydroxyphenyl)-propionate methane, or dilaurylthiodipropionate.

Claim 14. (Currently Amended) A packaging article, comprising:

(a) at least one oxygen barrier layer comprising

a blend of an oxygen barrier polymer and an oxygen scavenging polymer, and

a photoinitiator,

wherein the blend comprises from $[[1\%]]5\%$ to 30% oxygen scavenging polymer, the oxygen barrier polymer is poly(ethylene/vinyl alcohol) (EVOH), and the oxygen scavenging polymer ~~is~~ consists essentially of MXD6; and

(b) a transition metal salt in the oxygen barrier layer or a layer adjacent to the oxygen barrier layer.

Claims 15-18. (Canceled)

Claim 19. (Previously Presented) The packaging article of claim 14, wherein the transition metal is selected from cobalt, copper, nickel, iron, manganese, rhodium, or ruthenium.

Claim 20. (Original) The packaging article of claim 19, wherein the transition metal salt comprises a counterion selected from C₁-C₂₀ alkanoates.

Claim 21. (Original) The packaging article of claim 20, wherein the transition metal salt is cobalt oleate, cobalt stearate, or cobalt neodecanoate.

Claim 22. (Canceled)

Claim 23. (Original) The packaging article of claim 14, wherein the photoinitiator is selected from benzophenone derivatives containing at least two benzophenone moieties and having the formula:

09/575094US03

09/800,418

Art Unit: 1711

5

 $A_a(B)_b$

wherein

A is a bridging group selected from sulfur; oxygen; carbonyl; $-\text{SiR}''^2-$, wherein each R'' is individually selected from alkyl groups containing from 1 to 12 carbon atoms, aryl groups containing 6 to 12 carbon atoms, or alkoxy groups containing from 1 to 12 carbon atoms; $-\text{NR}'''-$, wherein R''' is an alkyl group containing 1 to 12 carbon atoms, an aryl group containing 6 to 12 carbon atoms, or hydrogen; or an organic group containing from 1 to 50 carbon atoms;

a is an integer from 0 to 11;

B is a substituted or unsubstituted benzophenone group; and

b is an integer from 2 to 12.

Claim 24. (Original) The packaging article of claim 23, wherein the photoinitiator is selected from dibenzoyl biphenyl, substituted dibenzoyl biphenyl, benzoylated terphenyl, substituted benzoylated terphenyl, tribenzoyl triphenylbenzene, substituted tribenzoyl triphenylbenzene, benzoylated styrene oligomer, or substituted benzoylated styrene oligomer.

Claim 25. (Original) The packaging article of claim 14, further comprising an antioxidant in the oxygen barrier layer.

Claim 26. (Original) The packaging article of claim 25, wherein the antioxidant is selected from 2,6-di(t-butyl)-4-methylphenol(BHT), 2,2'-methylene-bis(6-t-butyl-p-cresol), triphenylphosphite, tris-(nonylphenyl)phosphite, vitamin E, tetra-bismethylene 3-(3,5-ditertbutyl-4-hydroxyphenyl)-propionate methane, or dilaurylthiodipropionate.

Claim 27. (Previously Presented) The packaging article of claim 14, further comprising an oxygen barrier layer, wherein the oxygen barrier layer does not comprise a polyamide derived at least in part from a xylylene diamine-based monomer.

Claim 28. (Previously Presented) The packaging article of claim 27, wherein the oxygen barrier layer not comprising a polyamide derived at least in part from a xylylene diamine-based monomer comprises poly(ethylene vinyl alcohol) (EVOH), polyacrylonitrile (PAN), a copolymer comprising acrylonitrile, poly(vinylidene dichloride) (PVDC), polyethylene terephthalate (PET), or polyethylene naphthalate (PEN).

Claim 29. (Original) The packaging article of claim 14, further comprising a structural layer.

09/575094US03

09/800,418

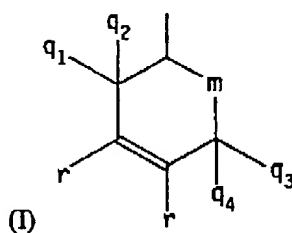
Art Unit: 1711

6

Claim 30. (Original) The packaging article of claim 29, wherein the structural layer comprises PET, polyamide, polypropylene, polyethylene, low density polyethylene, very low density polyethylene, ultra-low density polyethylene, high density polyethylene, polyvinyl chloride, ethylene-vinyl acetate, ethylene-alkyl (meth)acrylates, ethylene-(meth)acrylic acid, ethylene-(meth)acrylic acid ionomers, paperboard, or cardboard.

Claim 31. (Original) The packaging article of claim 14, further comprising an oxygen scavenging layer.

Claim 32. (Original) The packaging article of claim 31, wherein the oxygen scavenging layer comprises an oxygen scavenging polymer comprising an ethylenic backbone and a cycloalkenyl group with structure I:



wherein q_1 , q_2 , q_3 , q_4 , and r are independently selected from hydrogen, methyl, or ethyl; m is $-(CH_2)_n-$, wherein n is an integer from 0 to 4, inclusive; and, when r is hydrogen, at least one of q_1 , q_2 , q_3 , and q_4 is also hydrogen.

Claim 33. (Original) The packaging article of claim 32, wherein the oxygen scavenging layer comprises an oxygen scavenging polymer selected from ethylene/methyl acrylate/cyclohexenylmethyl acrylate terpolymer (EMCM), ethylene/vinyl cyclohexene copolymer (EVCH), ethylene/cyclohexenylmethyl acrylate copolymer (ECHA), or cyclohexenylmethyl acrylate homopolymer (CHAA).

Claim 34. (Original) The packaging article of claim 31, wherein the oxygen scavenging layer is a liner, coating, sealant, gasket, adhesive, non-adhesive insert, or fibrous mat insert in the packaging article.

Claim 35. (Original) The packaging article of claim 14, wherein the packaging article is in the form of a single layer flexible article, a multilayer flexible article, a single layer rigid article, or a multilayer rigid article.

Claim 36. (Currently Amended) A method of making an oxygen barrier composition comprising
a blend of an oxygen barrier polymer and an oxygen scavenging polymer,
a photoinitiator, and
an oxidation catalyst,

09/575094US03

09/800,418

Art Unit: 1711

7

wherein the blend comprises from ~~[[1%]]~~5% to 30% oxygen scavenging polymer, the oxygen barrier polymer is poly(ethylene/vinyl alcohol) (EVOH), and the oxygen scavenging polymer ~~is~~consists essentially of MXD6;

providing the poly(ethylene/vinyl alcohol) (EVOH), ~~[[,]]~~the MXD6, and the oxidation catalyst; and blending the poly(ethylene/vinyl alcohol) (EVOH), the MXD6, and the oxidation catalyst, to form the oxygen barrier composition.

Claims 37-38. (Canceled)

Claim 39. (Original) The method of claim 36, wherein the blending occurs during a reactive extrusion.

Claim 40. (Currently Amended) A method of forming an oxygen barrier layer in a packaging article~~[[,]]~~ comprising:

providing an oxygen barrier composition comprising

a blend of an oxygen barrier polymer and an oxygen scavenging polymer, and
a photoinitiator,

wherein the blend comprises from ~~[[1%]]~~5% to 30% oxygen scavenging polymer, the oxygen barrier polymer is poly(ethylene/vinyl alcohol) (EVOH), and the oxygen scavenging polymer ~~is~~consists essentially of MXD6;

forming the composition into the packaging article or an oxygen barrier layer thereof; and

forming a transition metal salt into the oxygen barrier layer or a layer adjacent to the oxygen barrier layer of the packaging article.

Claims 41-44. (Canceled)

Claim 45. (Original) The method of claim 40, wherein the oxygen barrier layer further comprises an antioxidant.

Claim 46. (Canceled)

Claim 47. (Previously Presented) The method of claim 40, further comprising forming a structural layer in the packaging article.

Claim 48. (Previously Presented) The method of claim 40, further comprising forming an oxygen scavenging layer in the packaging article.

Claim 49. (Previously Presented) The method of claim 40, further comprising forming the packaging article as a single layer flexible article, a multilayer flexible article, a single layer rigid article, or a multilayer rigid article.

09/575094US03

09/800,418

Art Unit: 1711

8

Claim 50. (Currently Amended) The oxygen barrier composition of claim 1, wherein the oxygen barrier polymer consists essentially of poly(ethylene/vinyl alcohol) (EVOH) ~~and the oxygen scavenging polymer consists essentially of MXD6.~~

Claim 51. (Previously Presented) The oxygen barrier compositions of claim 1, wherein the oxygen barrier polymer consists of poly(ethylene/vinyl alcohol) (EVOH) and the oxygen scavenging polymer consists of MXD6.

Claim 52. (Currently Amended) The packaging article of claim 14, wherein the oxygen barrier polymer of the at least one oxygen barrier layer consists essentially of poly(ethylene/vinyl alcohol) (EVOH) ~~and the oxygen scavenging polymer of the at least one oxygen barrier layer consists essentially of MXD6.~~

Claim 53. (Previously Presented) The packaging article of claim 14, wherein the oxygen barrier polymer of the at least one oxygen barrier layer consists of poly(ethylene/vinyl alcohol) (EVOH) and the oxygen scavenging polymer of the at least one oxygen barrier layer consists of MXD6.

Claim 54. (Currently Amended) The method of claim 36, wherein the oxygen barrier polymer consists essentially of poly(ethylene/vinyl alcohol) (EVOH) ~~and the oxygen scavenging polymer consists essentially of MXD6.~~

Claim 55. (Currently Amended) The method of claim 36, wherein the oxygen barrier polymer consists of poly(ethylene/vinyl alcohol) (EVOH) and the oxygen scavenging polymer consists of MXD6.

Claim 56. (Previously Presented) The method of claim 40, wherein the oxygen barrier polymer consists essentially of poly(ethylene/vinyl alcohol) (EVOH) ~~and the oxygen scavenging polymer consists essentially of MXD6.~~

Claim 57. (Previously Presented) The method of claim 40, wherein the oxygen barrier polymer consists of poly(ethylene/vinyl alcohol) (EVOH) and the oxygen scavenging polymer consists of MXD6.